UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,198	07/09/2003	Hyung Jun Kim	29936/39457	9666

4743 7590 05/06/2005

MARSHALL, GERSTEIN & BORUN LLP
233 S. WACKER DRIVE, SUITE 6300
SEARS TOWER
CHICAGO, IL 60606

EXAMINER	
UMEZ ERONINI, LYNETTE T	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/616,198	KIM, HYUNG JUN	
	Examiner	Art Unit	
	Lynette T. Umez-Eronini	1765	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/9/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Li et al. (US 6,251,784 B1).

Li teaches chemically mechanically polishing a substrate **100** with a target film of oxide (SiO_2) **104** over a stopping film if nitride (Si_3N_4) **102** using a slurry containing wafer and fumed silica and having a pH of 10.5 (column 3, lines 49-60). Li also teaches, detecting a polishing endpoint by removing the target film with a process that generates a chemical reaction product from the target film or the stopping film or both; converting

the chemical reaction product into a separate product; exposing the separate product to ionizing radiation; and monitoring the ionization current generated by the radiation as the target film is being removed. A change in the current indicates a change in the concentration of the separate product, and therefore in the concentration of the chemical reaction product (column 2, lines 36-51). The above reads on,

A method of detecting a polishing end point in a chemical mechanical polishing process, comprising the steps of:

using a sensor detecting variation in the concentration of a material within an initial polishing layer or a material within a polishing stop layer, which are contained in polishing wastewater drained during a polishing process.

Li further teaches, "A change in the current indicates a change in the concentration . . . of the chemical reaction product. This change can be correlated to the process endpoint, thereby providing real-time, . . . process control" (column 2, lines 48-53) and ". . . the sensing current **441** from the detection unit **400**, may advantageously include a computer executing a control program to monitor the CMP process and determine the process endpoint. When the endpoint of the CMP process is reached, the computer may send a control signal to the polishing apparatus **10** to terminate the film removal process. The controller **500** also receives a start signal from the polishing apparatus **10**, which triggers the program to being monitoring the endpoint signal automatically. . ." (column 6, lines 1-18). The aforementioned reads on,

using an EDP system to database information detected by the sensor; and

feeding back the result to a polisher in real time, wherein if a result that there is no change in the concentration of the material within the initial polishing layer is obtained, the polishing process continuously proceeds with an initial polishing process condition.

Li differs in failing to specifically disclose

if a result that variation in the concentration of the material within the initial polishing layer is not reduced but kept constant and variation in the concentration of the material within the polishing stop layer is not increased but kept constant, is obtained, using the EPD system to send a polishing process stop signal to the polisher, thus stopping the polishing process; and

if a result that variation in the concentration of the material within the initial polishing layer is reduced and variation in the concentration of the material within the polishing stop layer is increased, is obtained, performing the polishing process by lowering a polishing pressure.

However, the presently claimed feature, if a result that variation in the concentration of the material within the initial polishing layer is not reduced but kept constant and variation in the concentration of the material within the polishing stop layer is not increased but kept constant, is obtained, using the EPD system to send a polishing process stop signal to the polisher, thus stopping the polishing process; and

if a result that variation in the concentration of the material within the initial polishing layer is reduced and variation in the concentration of the material within the polishing stop layer is increased, is obtained, performing the polishing process by lowering a polishing pressure, in the said claim, would

obviously have been provided as a result of using Li's endpoint detection method in the same manner as those of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit 1765

LAN VINH
PRIMARY EXAM

ltue

May 2, 2005